Skin, Hair, and Nails Update 2019
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Cosmeceutical Update 2019

✦ New Cosmetic Needs:
  − Make my skin smooth and soft
  − Make my pores smaller
✦ New Skin Care Concepts: Prebiotic, Probiotic, and Postbiotic Moisturizers
✦ New Hair Trends: Rebirth of Hair Extensions
✦ New Nail Technology: Powder Gel Nails

Cosmetic Needs: Smooth Skin

✦ Smooth skin is a visual appearance
✦ Smooth skin is characterized by abundant light reflection from an even surface
✦ Healthy skin has dermatoglyphics creating an uneven surface
✦ It is the regular irregularity of the skin surface that creates smooth skin
✦ Moisturizers are used to smooth the skin surface by filling in depressions

Temporary Moisturizer-Created Smooth Skin

✦ Humectants to help skin hold water: hyaluronic acid, glycerin, butylene or propylene glycol
✦ Film forming polymers: dimethicone crosspolymer
✦ Function until removed with cleansing, minimal physiologic change

Cosmetic Needs: Soft Skin

✦ Soft skin is a tactile assessment
✦ Soft skin is characterized by the absence of friction
✦ Soft skin can be created by a smooth skin surface, but also by putting a low resistance film on the skin
✦ Emollients are used to make the skin feel soft by filling in the voids between the desquamating corneocytes

Traditional vs. Combination Therapy Approach to Smooth and Soft

✦ The traditional approach is the use of moisturizers:
  − Film forming dimethicone crosspolymers fill in skin depressions creating a temporary smooth surface
  − Emollients (dimethicone, cyclomethicone) reduce surface friction to temporarily create skin softness by smooth skin scale
✦ The combination therapy approach is the use of exfoliant scrub:
  − Particulate scrubs will remove desquamating corneocytes
  − Various particulates are available to meet the needs of the patient
  − The effect is longer lasting, remaining after product has been removed
Cosmetic Needs: Smaller Pores

- Pore size is fixed and genetically determined
- Pore size is related to size of underlying sebaceous gland
- Pore may be expanded by retained sebum and skin debris
- No permanent solution to decreasing pore size

Temporary Solution to Decreasing Pore Size

- Apply a facial foundation with light reflecting particles
- Particles lodge in pores and reflect light from the depression
- Optical illusion
- Temporary until makeup film is destroyed or removed

Cosmetic Approach to Smaller Pores

- The traditional approach is the use of facial cosmetics:
  - Light reflective foundations can be augmented with facial powders containing light reflective pigments
  - Goal is to decrease the shadow of the pore
- The combination therapy approach is the use of cleansing devices and exfoliant toner pads:
  - Mechanized silicone head oscillating cleansing devices can clean within the pore removing retained debris
  - Different silicone head designs can cause more or less movement of the pores to physically remove debris
  - Toner cleansing pads with salicylic acid (oil soluble) and urea plus glycolic acid (water soluble) can aid in chemical debris removal

Prebiotic, Probiotic, and Postbiotic Moisturizers

Prebiotic Skin Care

- Prebiotics are substances that promote the growth of beneficial organisms and inhibit harmful organisms on the skin surface
- Oral prebiotics are nondigestible carbohydrates found in fibrous foods: legumes, whole wheat, garlic, onions, oats, berries, etc
- These foods contain fructo-oligosaccharides (FOS) and galacto-oligoaccharides (GOS) providing nutrition for beneficial bacteria
- Topical sugars are also thought to provide nutrition for beneficial bacteria functioning as prebiotics
- Most prebiotic skin care products as based on sugars or plant oils

Probiotic Skin Care

- Dairy propionic acid bacteria (PAB) are largely used in skin care due to their safety profile
Important bacterial considerations: adhesion to the skin, transient colonization, resistance toward potential pathogens, production of antimicrobial substances

In vitro studies show PAB adhesion rates of 4-16% to the stratum corneum, may modulate cytokines

New Hair Trend: Hair Extensions
Hair Extension Technique
- Hair extensions are used to create the illusion of long hair
- Synthetic hair is attached to bundles of existing hair with clips and/or glue
- Extensions are worn 24/7
- Extensions washed and groomed with native hair
- Care must be taken not to tangle hair
- Require salon care every 3 weeks

Summary: Hair Extension Problems
- Hair extension clients usually do not aggressively shampoo scalp as extensions tangle and loosen. Seborrheic dermatitis and dandruff a common side effect.
- Hair extensions pull on native hair, longer extensions produce more pull, resulting in traction alopecia.
- Synthetic hair tangles with native hair, synthetic hair is stronger than native hair, hair breakage is a major problem.
- Frequent salon visit maintenance is the key to preventing problems.

Nail Cosmetic Technology: Powder Gel Nails
- Gel nails, also known as SNS nails, are dominating the professional nail care market
- Gel nails are popular because they are vividly colored, chip resistant, long wearing, and do not use UV light to cure polymer
- They can be applied very rapidly (20-30 minutes)
- They are relatively inexpensive ($40-$80)

1. Remove Old Gel Nail
- Old polymer must be removed prior to applying new gel nail
- Polymer is tightly bound to natural nail plate
- Drill used to thin, loosen, and remove old polymer quickly
- Polymer dust introduced in breathing air

2. Soak Nail in Acetone
- Remaining polymer cannot be removed with drill or natural nail plate will be damaged
- Cotton ball soaked with acetone is placed on top of nail
- Wrapped with aluminum foil to saturate nail with acetone
- Acetone loosens additional polymer

3. Allow Acetone to Degrade Polymer
- Polymer, nails, fingertips soaked with acetone
May cause fingertip and cuticle irritation
May dehydrate exposed natural nail plate
New gel nail cannot be constructed until old gel nail removed

4. Drill Removal of Remaining Gel Nail Debris
- Acetone soaking loosened more of prior gel nail
- Drill used again to remove any remaining gel nail
- Inevitably some natural nail plate is removed, as well
- Natural nail plate thin and rough following removal process

5. Sanding of Natural Nail Plate
- Natural nail plate is sanded smooth by hand
- Final sanding necessary to get even rough nail surface
- Rough surface necessary for optimal adherence of polymer
- If nail surface too rough, new gel nail will not be smooth

6. Catalyst Painted on Natural Nail Plate
- Catalyst containing benzoyl peroxide is painted on nail plate
- Nails are made from plexiglass that is polymerized on the natural nail plate
- Nails advertised to be free of parabens, phthalates, formaldehyde, toluene
- Liquids contains Vitamins A, E, D3, B5, and calcium for nail strength (?)

7. Nail Dipped in Polymer Powder
- Nail dipped in clear powdered methacrylate monomers
- No UV curing
- Homolytic bond cleavage by BPO forms 2 oxygen radicals that decompose further to carbon dioxide plus a phenyl radical adding to one methacrylate double bond
- Process repeats until two carbon centered radicals combine

8. Second Layer Catalyst and Polymer
- Clear polymer allowed to dry
- Another layer of catalyst applied
- Powdered color methacrylate monomer applied
- Color layer allowed to dry, in this case red glitter
- Clients pick nail color from extensive color chart

9. Third Clear Layer Applied
- Third layer of catalyst applied
- Nail dipped for the third time in clear methacrylate monomer
- Final clear coat to protect nail color from fading and nail product from chipping
- Nails can yellow from cleansers, bleach, UV exposure, hand lotion

10. Final Nail Buffed
- Gel nail allowed to thoroughly dry, sometimes placed under a fan
- Polishing drill used to even nail surface
Uneven polymer is removed
Gel nails can be shaped
Polishing drill makes nail surface shiny

Summary: Gel Nail Problems
- Natural nail plate thinned in manicure process from drill used in removal process
- Acetone soaking to remove gel nail dehydrates natural nail plate
- No oxygen exchange possible for natural nail plate resulting in further nail thinning
- Cuticle must be removed for gel nails to have even contour at proximal nail bed

Summary: Skin, Hair, Nail Cosmetics Update 2019
- Smoother, softer skin achievable with new film forming emollients and exfoliants
- Pore size reduction with new silicone cleansing devices and textured salicylic acid pads
- Prebiotic, probiotic, and postbiotic moisturizers new entries into skin care
- Hair Extensions look great, but break natural hair causing traction alopecia
- Powder gel nails are beautiful, but damage underlying nail plate when removed